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United States Patent [19]

Gehrke et al.

[11] **Patent Number:** **5,674,521**[45] **Date of Patent:** **Oct. 7, 1997**[54] **ENHANCED LOADING OF SOLUTES INTO POLYMER GELS AND METHODS OF USE**

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[51] **Int. Cl.⁶** **A61F 2/02; A61K 47/30**

[52] **U.S. Cl.** **424/423; 514/772.3; 514/781**

[58] **Field of Search** **424/423; 514/772.3, 514/781**

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ABSTRACT

A method of loading a drug into a crosslinked polymer network and protecting the drug from the effects of inactivation is described. The method includes the steps of contacting a biologically active solute (e.g. drug) with: (i) a gel network; (ii) a loading polymer that is somewhat immiscible with the gel; and (iii) a salt, under conditions sufficient for the biologically active solute to selectively partition into the gel and the salt and the loading polymer to be entrained in the gel. A drug delivery system including a polymer gel network and the drug to be delivered is also described. The system also includes a salt and/or a loading polymer. The system protects the drug from loss of activity. In one embodiment, the polymer gel network is capable of expanding or collapsing in response to a change in an environmental condition to which the gel is exposed, the expanding or collapsing sufficient to release the drug into an environment of use.

14 Claims, 1 Drawing Sheet